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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/634,428	08/05/2003	Taku Ishizawa	405507/0012	8311

7590 12/30/2005

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EXAMINER	
NGUYEN, LAM S	

ART UNIT	PAPER NUMBER
2853	

DATE MAILED: 12/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/634,428	ISHIZAWA ET AL.	
	Examiner	Art Unit	
	LAM S. NGUYEN	2853	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *06 October 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-5 and 7-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-5 and 7-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *04 August 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

Claim 15 is objected to because of the following informalities: The word "clams" on line 2 should be corrected as "claims". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-5, 8-12, 15-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murray et al. (US 5610635) in view of Nagata et al. (US 5838549).

Referring to claims 1, 8, 11-12, 15-16:

Murray et al. discloses a circuit board (*FIG. 6*) for a marking material device/receptacle (*FIG. 3*) such as an ink cartridge or a toner cartridge having a storage device (*FIG. 6, element 49*) for storing data relating to a marking material for printing cartridge having a substantially rectangular shape, said circuit board comprising:

at least two ground terminals (*FIG. 6, elements 1 and 9*) arranged on said circuit board at two edges (outermost ends of a row) thereof that are located on one axis thereof; and

a plurality of terminals (*FIG. 6, elements 1-10*) arranged on said circuit board in a plurality of rows, for read/write operations on said data relating to the marking material for printing, said plurality of terminals including a power supply terminal (*FIG. 6, elements 2, 8, 10*) and a control signal terminal (*FIG. 6, elements 3-7*),

wherein the at least two ground terminals are arranged in a row that is different from a row contains said power supply terminal (*FIG. 6*), and

wherein two of said terminals are ground terminals arranged so that a printing device can determine if the marking material receptacle bas been installed correctly (*Since the claim preamble is a circuit board, the operation of a printing device to determine if the marking material receptacle has been installed correctly is not part of the circuit board. As a result, this claim element is considered but not given patentability weight*).

Murray et al. does not disclose wherein said at least two ground terminals are not the terminals in closest proximity to said power supply terminal and wherein said power supply terminal is located at the center of the row that contains said power supply terminal (**Referring to claim 12**).

Nagata et al. discloses a circuit board having a storage device (*FIG. 1, element 3*) and plurality of terminals (*FIG. 1, element 41*) for electrical connecting to the storage device to other components. The terminals include at least a ground terminal (*FIG. 1, element Gnd*) arranged at an edge of the board or outermost of the terminal array and a power supply terminal (*FIG. 1, element Vcc*) located at the center of the terminal array, wherein the ground terminal and the power supply terminal are not in closest proximity.

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the circuit board disclosed by Murray et al. to locate the power supply terminal not being proximity to the ground terminals as disclosed by Nagato et al. because this is a common technique well known in the art to avoid the risk of short circuit due to current licking between the closed terminals or dust located between the terminals.

- **Murray et al. also discloses the following claimed invention:**

Referring to claim 2: wherein said plurality of terminals and said ground terminals are arranged in a single row with two of said at least two ground terminals being located at the outermost ends of said row (*FIG. 6: The row includes terminals 1, 3, 5, 7, and 9*).

Referring to claims 3, 9: wherein said plurality of terminals are arranged to form a plurality of rows parallel to one side of said circuit board (*FIG. 6: The terminals are arranged in two rows*), with two of said at least two ground terminals being located at the outermost ends of one of said plurality of rows (*FIG. 6: The upper row that includes terminals 1, 3, 5, 7, and 9*).

Referring to claims 4, 10: wherein said plurality of terminals include a clock signal terminal, said clock signal terminal being located between two of said at least two ground terminals (*FIG. 6 and column 7, lines 32-38: The SHIFT terminal*).

Referring to claim 5: wherein said plurality of terminals include a power supply terminal, two of said at least two ground terminals being located at the outermost ends of a row different than the row that contains said power supply terminal (*FIG. 6*).

2. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murray et al. (US 5610635) in view of Nagata et al. (US 5838549).

Murray et al., as modified, discloses the claimed invention as discussed above and also teaches that each terminal row contains five terminals rather than four terminals in the row containing said ground terminals and three terminals in the row containing said power supply terminal. In addition, the claim invention does not define the number of the terminals in a row in a way to show such number is a critical value. As a result, it would have been obvious to one having ordinary skill in the art at the time the invention was made to change or reduce the

number of terminals in a row in order to fit to a specific application, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F. 2d 272, 205 USPQ 215 (CCPA 1980).

3. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murray et al. (US 5610635) in view of Nagata et al. (US 5838549), as applied to claims 1 and 3-5, and further in view of Ito et al. (US 5748179).

Murray et al., as modified, discloses the claimed invention as discussed above but is silent wherein said plurality of terminals are arranged at intervals of approximately 1 mm in the direction of formation of said rows.

Ito et al. discloses a circuit board having a plurality of terminals are arranged at intervals of approximately 1 mm in the direction of formation of said rows (*column 7, lines 51-55*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the plurality of terminals disclosed by Murray et al., as modified, to locate the terminal at interval of approximately 1mm from each other as disclosed by Ito et al. The motivation for doing so would have been to reduce the noise interference due to the close position of the electrical terminals as well known in the art.

4. Claims 13 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Murray et al. (US 5610635) in view of Nagata et al. (US 5838549), as applied to claims 11-12, and further in view of Corrigan et al. (US 6575548).

Murray et al., as modified, discloses the claimed invention as discussed above except wherein the terminals in the rows are arranged in alternating fashion and wherein the printing

device measures electrical continuity between contact pins located in the printing device and said ground terminals when said marking material receptacle is installed correctly.

Corrigan et al. discloses a printing device (*FIG. 2*) having an ink cartridge (*FIG. 3*) mounted on the printing device for marking ink on a printing medium and including a circuit board containing a plurality of electrical terminals *(FIG. 3, elements 312*) arranged in an alternating fashion for electrical communication between the ink cartridge and the printing device, wherein the electrical continuity through the contact pads is tested to determine if the contact is defective due to incorrect installation of the cartridge in the printing device (*FIG. 8-9 column 11, line 63 to column 12, line 20; column 12, lines 43-55*).

Therefore, it would have been obvious for one having ordinary skill in the art at the time invention was made to modify the printing device disclosed by Murray et al., as modified, to include the operation of testing the installation by measuring the electrical continuity between the contact terminals as disclosed by Corrigan et al. The motivation for doing so would have been to ensure the electrical communication between the ink cartridge and the printing device since if the pad continuity is not present, no current flow through the junction between the ink cartridge and the printing device as taught by Corrigan et al. (*column 12, lines 1-4*).

Response to Arguments

Applicant's arguments filed 10/06/2005 have been fully considered but they are not persuasive.

First of all, the applicant argued that Nagata does not suggest two ground terminals being arranged on the circuit board at two edges thereof located on one axis thereof, or not being the terminals in closest proximity to the power supply terminal. The examiner, in response, cites that

Murray et al. already teaches the arrangement of at least two ground terminals at two edges of a terminal ground in the circuit board (*FIG. 6, elements 1 and 9*), what Murray et al. does not teach is that the ground terminal and the power supply terminal are not closet proximity located. In compensation for Murray' s lacking, Nagata teaches some important features that supports for the modification: The ground terminal GND is located at an outermost position of a terminal array, the power supply terminal Vcc is located at the center of the array, and the ground terminal and the power supply terminal are located far away. As a result, based on Nagata's teaching, one of ordinary skill in the art would locate Murray's power supply terminals in the middle of the terminal rows to space a part the ground terminals and the power supply terminals.

In addition, in response to applicant's argument that there is no suggestion to combine the Murray and Nagata references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, the suggestion is from the knowledge generally available to one of ordinary skill in the art to position the ground terminal and the power supply terminal not close together to avoid the electrical leakage or short circuit.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S. NGUYEN whose telephone number is (571)272-2151. The examiner can normally be reached on 7:00AM - 3:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, STEPHEN D. MEIER can be reached on (571)272-2149. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LN
12/23/2005

Hai Pham

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PRIMARY EXAMINER